9. Users Manual

* Depending on the software installed or your service provider or country, some of the descriptions in this guide may not match your phone exactly.
* Depending on your country, your phone and accessories may appear different from the illustrations in this guide.

SAMSUNG ELECTRONICS

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User’s Guide

Important safety precautions

☑ Failure to comply with the following precautions may be dangerous or illegal.

Copyright information

- Bluetooth® is a registered trademark of the Bluetooth SIG, Inc. worldwide.
  Bluetooth QD ID: BOXXXXX
- Java™ is a trademark or registered trademark of Sun Microsystems, Inc.
- Windows Media Player® is a registered trademark of Microsoft Corporation.

Drive safely at all times

Do not use a hand-held phone while driving. Park your vehicle first.

Switch off the phone when refuelling

Do not use the phone at a refuelling point (service station) or near fuels or chemicals.

Switch off in an aircraft

Wireless phones can cause interference. Using them in an aircraft is both illegal and dangerous.

Switch off the phone near all medical equipment

Hospitals or health care facilities may be using equipment that could be sensitive to external radio frequency energy. Follow any regulations or rules in force.

Interference

All wireless phones may be subject to interference, which could affect their performance.

Be aware of special regulations

Meet any special regulations in force in any area and always switch off your phone whenever it is forbidden to use it, or when it may cause interference or danger.

Water resistance

Your phone is not water-resistant. Keep it dry.

Sensible use

Use only in the normal position (held to your ear). Avoid unnecessary contact with the antenna when the phone is switched on.

Emergency calls

Key in the emergency number for your present location, then press .

Keep your phone away from small children

Keep the phone and all its parts, including accessories, out of the reach of small children.

Accessories and batteries

Use only Samsung-approved batteries and accessories, such as headsets and PC data cables. Use of any unauthorized accessories could damage you or your phone and may be dangerous.

- The phone could explode if the battery is replaced with an incorrect type.
- Dispose of used batteries according to the manufacturer's instructions.

At very high volumes, prolonged listening to a headset can damage your hearing.

Qualified service

Only qualified service personnel may repair your phone.

For more detailed safety information, see "Health and safety information" on page 36.

About this Guide

This User's Guide provides you with condensed information about how to use your phone.

In this guide, the following instruction icons appear:

☑	Indicates that you need to pay careful attention to the subsequent information regarding safety or phone features.
→	Indicates that you need to press the Navigation keys to scroll to the specified option and then select it.
[ ]	Indicates a key on the phone. For example, [ ]
< >	Indicates a soft key, whose function is displays on the phone screen. For example, <**Menu**>

- **Camera and camcorder**

  Use the camera module on your phone to take a photo or record a video.

Special features of your phone

- **Synchronization with Windows Media Player**

  Transfer music files to your phone directly from the Windows Media Player.

- **Java**

  Enjoy Java-based embedded games and download new games.

- **Music player**

  Play music files using your phone as a music player. You can use other phone functions while listening to music.

- **Offline mode**

  Switch your phone to Offline mode to use its non-wireless functions while on an airplane.

- **Bluetooth**

  Transfer media files and personal data, and connect to other devices using wireless Bluetooth technology.

- **Web browser**

  Access the wireless web to get up-to-the-minute information and a wide variety of media content.

- **Multimedia Message Service (MMS)**

  Send and receive MMS messages with a combination of text, images, video, and audio.

- **SOS message**

  Send SOS messages to your family or friends for help in an emergency.

- **Voice recorder**

  Record memos or sounds.

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Overview of menu functions

To access Menu mode, press <**Menu**> in Idle mode.

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6 Call time
7 Call cost[1]

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1 Music player
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3 Applications

4 Java world
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4 emoción

1 Home
2 Enter URL
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5 History
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5 Messages

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7 Camera

8 Settings

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2 Phone settings
3 Display settings
4 Sound settings
5 Light settings
6 Network services
7 Bluetooth
8 Security
9 Connection settings
10 Reset settings

1. Available only if supported by your SIM card.
2. Available only if a memory card is inserted.

Unpack

Make sure you have each item

- Phone
- Travel adapter
- Battery
- User's Guide

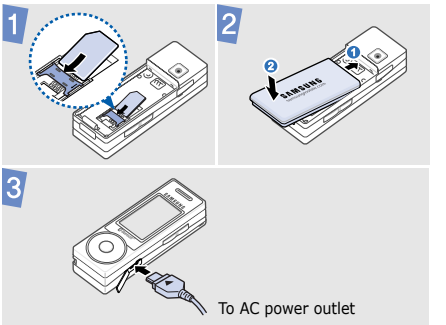
You can obtain various accessories from your local Samsung dealer.

The items supplied with your phone and the accessories available at your Samsung dealer may vary, depending on your country or service provider.

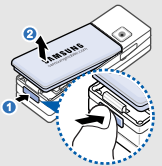
Get started

First steps to operating your phone

Assemble and charge the phone



Removing the battery

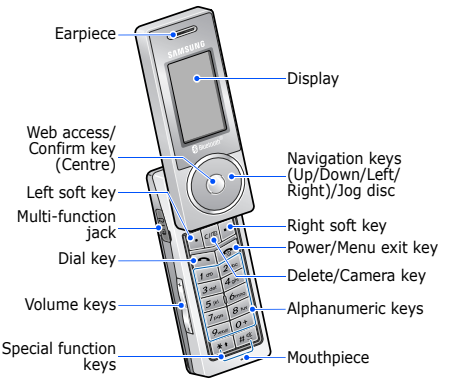


Power on or off

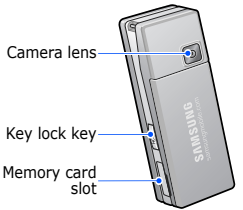
Switch on	1. Open the phone. 2. Press and hold [ ]. 3. If necessary, enter the PIN and press <**OK**>.
Switch off	1. Open the phone. 2. Press and hold [ ].

Phone layout

With the phone open



With the phone closed



Keys and icons

Keys

	In Idle mode, access your favorite menus directly. In Menu mode, scroll through menu options. You can rotate the jog disc to scroll through numbered menu options.
	In Idle mode, launch the web browser. With the phone closed, press and hold to launch or close the music player. In Menu mode, select the highlighted menu option or confirm input.

Perform the function indicated on the bottom line of the display.

Delete characters from the display or items in an application.

In Idle mode, press and hold to turn on the camera. In Camera mode, take a photo or record a video.

Make or answer a call.

In Idle mode, retrieve the numbers recently dialled, missed, or received.

Press and hold to switch the phone on or off.

End a call.

In Menu mode, cancel input and return the phone to Idle mode.

Enter numbers, letters, and some special characters.

In Idle mode, press and hold [**1**] to access your voicemail server. Press and hold [**0**] to enter an international call prefix.

Enter special characters or perform special functions.

In Idle mode, press and hold [#] to activate or deactivate Silent mode. Press and hold [*] to enter a pause between numbers.

	Adjust the phone volume.
	In the music player, with the phone closed, press and hold to lock the exposed keys.

Icons

The following icons may appear on the top line of the screen to indicate your phone's status. Depending on your country or service provider, the icons shown on the display may vary.

	Received signal strength
	GPRS network
	Connecting to GPRS network
	Transferring data in GPRS network
	Call in progress
	Out of your service area; you cannot make or receive calls
	SOS message feature active
	Alarm set
	Music playback in progress
	Music playback paused
	New message: • : Text message • : Multimedia message • : Voicemail • : Configuration message

	Call diverting feature active
	Bluetooth active
	Bluetooth hands-free car kit or headset connected
	Browsing Internet on PC using phone as modem
	Home Zone
	Office Zone
	Roaming network
	Connected to a secured web page
	Memory card inserted

	Silent mode (Vibration)
	Silent mode (Mute)
	Call ringer set to vibrate
	Battery power level

Access menu functions

Select an option	1. Press a desired soft key. 2. Press the Navigation keys to move to the next or previous option. 3. Press <**Select**>, <**OK**>, or [Centre] to confirm the function displayed or option highlighted. 4. Press <**Back**> to move up one level. Press [☎] to return to Idle mode.
Use menu numbers	Press the number key corresponding to the option you want.

Enter text

Change the text input mode	• Press and hold [✳] to switch between T9 mode (T9Ab) and ABC mode (ABAb). • Press [✳] to change case or switch to Number mode (123). • Press and hold [#] to switch to Symbol mode.
ABC mode	To enter a word: Press the appropriate key until the character you want appears on the display.

T9 mode	To enter a word: 1. Press [**2**] to [**9**] to start entering a word. 2. Enter the whole word before editing or deleting characters. 3. When the word displays correctly, press [**#**] to insert a space. Otherwise, press [**0**] to display alternative word choices.
Number mode	Press the keys corresponding to the digits you want.

Symbol mode	Press the corresponding number key to select a symbol.
Other operations	• Press [**1**] to enter punctuation marks or special characters. • Press [**#**] to insert a space. • Press the Navigation keys to move the cursor. • Press [**C**/📷] to delete characters one by one. • Press and hold [**C**/📷] to clear the entire display.

Customize your phone

Display language

1. In Idle mode, press <**Menu**> and select **Settings** → **Phone settings** → **Language**.
2. Select a language.

Call ringer melody

1. In Idle mode, press <**Menu**> and select **Settings** → **Sound settings** → **Incoming call** → **Ringtone**.
2. Select a ringtone category.
3. Select a ringtone.
4. Press <**Save**>.

Key tone volume

In Idle mode, press [**+**/**-**] to adjust the key tone volume.

Idle mode wallpaper

1. In Idle mode, press <**Menu**> and select **Settings** → **Display settings** → **Wallpaper** → **Main display**.
2. Select an image category.
3. Select an image.
4. Press <**Select**>.
5. Press <**Save**>.

Menu mode skin color

1. In Idle mode, press <**Menu**> and select **Settings** → **Display settings** → **Skin**.
2. Select a color pattern.

Menu shortcuts

1. In Idle mode, press <**Menu**> and select **Settings** → **Phone settings** → **Shortcuts**.
2. Select a key.
3. Select a menu to be assigned to the key.

Silent mode

You can switch the phone to Silent mode to avoid disturbing other people. In Idle mode, press and hold [#].

Phone lock

1. In Idle mode, press <**Menu**> and select **Settings** → **Security** → **Change password**.
2. Enter the default password, **00000000**, and press <**OK**>.
3. Enter a new 4- to 8-digit password and press <**OK**>.
4. Enter the new password again and press <**OK**>.
5. Select **Phone lock**.
6. Select **Enable**.
7. Enter the password and press <**OK**>.

Step outside the phone

Begin with call functions, camera, music player, web browser, and other special features

Make or answer calls

Make a call

1. In Idle mode, enter an area code and phone number.
2. Press [ ].
   Press [**+/-**] to adjust the volume.
3. Press [ ] to end the call.

Answer a call

1. When the phone rings, press [ ].
2. Press [ ] to end the call.

Make a multi-party call

1. During a call, call the second participant.
   The first call is put on hold.
2. Press <**Options**> and select **Join**.
3. Repeat step 1 and 2 to add more participants.
4. During a multi-party call:
   - Press <**Options**> and select **Private** to have a private conversation with one participant.
   - Press <**Options**> and select **Removed** to drop one participant.
5. Press [ ] to end the multi-party call.

Play music

Copy music files to the phone

You can play .mp3, .aac, .aac+, and .wma files. Use these methods:

- Download from the wireless web.
- Download from a PC using the optional Samsung PC Studio. See Samsung PC Studio User's Guide.
- Receive via Bluetooth.
- Synchronize music files with Windows Media Player. See the next section.

Synchronize with Windows Media Player

You can copy music files to your phone by synchronizing with Windows Media Player 10.

1. In Idle mode, press <**Menu**> and select **Settings** → **Phone settings** → **USB setting** → **Media transfer(MTP)**.
2. Connect your phone and computer with an optional PC data cable.
3. Select **Synchronize media files to this device** when a pop-up window appears on your PC.

4. Select **Automatic** to set Windows Media Player and the phone to start synchronization automatically. Click **Finish** and skip to step 8.
   Select **Manual** to set up a sync list and start synchronization manually. Click **Finish** and continue next steps.
5. Click **Edit Playlist**.
6. Select the music files you want and click **OK**.
7. Click **Start Sync**.
8. When synchronization is finished, disconnect the phone from the PC.

Play music files

1. Close the phone and press and hold [Centre].
2. Press [Centre] to start playing music.
3. During playback, use the following keys:
   - Centre: pause or resume playback.
   - Up: return to the previous file. Press and hold to move backward in a file.
   - Down: skip to the next file. Press and hold to move forward in a file.

- Right: open the playlist.
- **+** or **-**: adjust the volume.
- Left: access music player options.
- **HOLD**: press and hold to lock or unlock the exposed keys.

4. To close the music player, press and hold [Centre].

Select a playlist

1. From the music player screen, press [Left] and select **Open playlist**.
2. Select a playlist.
3. Press [Centre] to play the selected file.

Create a playlist

1. From the music player screen, press [Left] and select **Open playlist**.
2. Select **My music**.
3. Press [Left] and select **Create playlist**.
4. Press [Up] to return to the Playlists screen.
5. Select **All** → a music file.
6. Press [Down] and select **Add to playlist**.
7. For **Multiple**, press [Left] to select files and press [Centre].

8. Press [Left] to select the playlist you just created and press [Centre].
9. Press [Centre] to save your playlist.

Use the camera

Take a photo

1. In Idle mode, press and hold [C/📷] to turn on the camera.
2. Aim the lens at the subject and make any desired adjustments.
3. Press [Centre] or [C/📷] to take a photo. The photo is saved automatically.
4. Press <**Preview**> to take another photo.

View a photo

1. In Idle mode, press <**Menu**> and select **My files** → **Images** → **My photos**.
2. Select the photo you want.

Record a video

1. In Idle mode, press and hold [C/📷] to turn on the camera.
2. Press [**1**] to switch to Record mode.

3. Press [Centre] or [C/📷] to start recording.
4. Press [Centre], <■>, or [C/📷] to stop recording. The video is saved automatically.
5. Press <📷> to record another video.

View a video

1. In Idle mode, press <**Menu**> and select **My files** → **Videos** → **My video clips**.
2. Select the video you want.

Browse the web

Launch the web browser

In Idle mode, press <**emoción**>. The homepage of your service provider opens.

Navigate the web

- To scroll through browser items, press [Up] or [Down].
- To select an item, press [Centre].
- To return to the previous page, press <**Back**>.
- To access browser options, press <**Options**>.

Use Phonebook

Add a contact

1. In Idle mode, enter a phone number and press <**Options**>.
2. Select **Save contact** → a memory location → **New**.
3. For **Phone**, select a number type.
4. Specify contact information.
5. Press <**Save**> or [Centre] to save the contact.

Find a contact

1. In Idle mode, press <**Menu**> and select **Phonebook**.
2. Enter the first few letters of the name you want.
3. Select a contact.
4. Scroll to a number and press [ ] to dial, or press [Centre] to edit contact information.

Send messages

Send a text message

1. In Idle mode, press <**Menu**> and select **Messages** → **Create message** → **Text message**.
2. Enter the message text.
3. Press <**Options**> and select **Save and send** or **Send only**.

4. Enter destination numbers.
5. Press [Centre] to send the message.

Send a multimedia message

1. In Idle mode, press <**Menu**> and select **Messages** → **Create message** → **Multimedia message**.
2. Select **Subject**.
3. Enter the message subject and press [Centre].
4. Select **Image or video** and add an image or a video clip.
5. Select **Sound** and add a sound clip.
6. Select **Text**.
7. Enter the message text and press [Centre].
8. Press <**Options**> and select **Send**.
9. Enter destination numbers or email addresses.
10. Press [Centre] to send the message.

View messages

View a text message

1. In Idle mode, press <**Menu**> and select **Messages** → **My messages** → **Inbox**.
2. Select a text message.

View a multimedia message

1. In Idle mode, press <**Menu**> and select **Messages** → **My messages** → **Inbox**.
2. Select a multimedia message.

Use Bluetooth

Your phone is equipped with Bluetooth technology, enabling you to connect the phone wirelessly to other Bluetooth devices and exchange data with them, talk hands-free, or control the phone remotely.

Turn on Bluetooth

1. In Idle mode, press <**Menu**> and select **Settings** → **Bluetooth** → **Activation** → **On**.
2. Select **My phone's visibility** → **On** to allow other devices to locate your phone.

Search for and pair with a Bluetooth device

1. In Idle mode, press <**Menu**> and select **Settings** → **Bluetooth** → **My devices** → **Search for new devices**.
2. Select a device.
3. Enter a Bluetooth PIN or the other device's Bluetooth PIN, if it has one, and press <**OK**>.
   When the owner of the other device enters the same code, pairing is complete.

Send data

1. Access an application, such as **Phonebook**, **My files**, **Calendar**, or **Memo**.
2. Select an item.
3. Press <**Options**> and select **Send via** → **Bluetooth**.
4. For sending a contact, select which data you want to send.
5. Search for and select a device.
6. If necessary, enter the Bluetooth PIN and press <**OK**>.

Receive data

1. When a device attempts to access your phone, press <**Yes**> to permit the connection.
2. If necessary, press <**Yes**> to confirm that you are willing to receive.

Menu functions

All menu options listed

This section provides brief explanations of menu functions on your phone.

Call log

Menu	Description
Recent contacts, Missed calls, Dialled calls, Received calls	Check the most recent calls dialled, received, or missed.
Delete all	Delete all of the records in each call type.
Call time	Check the time record for calls made and received.
Call cost	Check the cost of your calls, if supported by your SIM card.

Phonebook

Menu	Description
Contact list	Search for contact information stored in Phonebook.
Create contact	Add a new contact to Phonebook.
Group	Organize your contacts in caller groups.

Menu	Description
Speed dial	Assign a speed dial number for your most frequently dialled numbers.
My namecard	Create a name card and send it to other people.
Own number	Check your phone numbers, or assign a name to each of the numbers.
Management	Manage contacts in Phonebook or change the default settings for Phonebook.
Service number	View the SDN (Service Dialling Number) list assigned by your service provider, if supported by your SIM card.

Applications

Menu	Description
Music player	Listen to music.
Calendar	Keep track of your schedule.
Voice recorder	Record voice memos and any other sounds.
Java world	Access Java games and applications.
World clock	Set your local time zone and find out the current time in another part of the world.
Alarm	Set a wake-up call to wake you up in the morning or an alarm to alert you to an event at a specific time.

Menu	Description
Calculator	Perform arithmetic functions.
Convertor	Do conversions, such as length and temperature.
Timer	Set a period of time for the phone to count down.
Stopwatch	Measure elapsed time.
Key management	Manage the licence keys you have acquired to activate media files locked by DRM systems.
Memo	Make memos for things that are important and manage them.

Menu	Description
SIM application toolkit	Use a variety of additional services offered by your service provider. This menu is available only if supported by your SIM card.

emoción

Menu	Description
Home	Connect your phone to the network and load the homepage of the wireless web service provider.
Enter URL	Enter a URL address and access the associated web page.

Menu	Description
Bookmarks	Save URL addresses in order to quickly access web pages.
Saved pages	Access the list of pages you have saved while online.
History	Access the list of pages you have accessed recently.
Clear cache	Clear the cache, which is a temporary memory site that stores recently accessed web pages.
Browser settings	Select a connection profile to be used for accessing the wireless web.
Streaming settings	Select a connection profile to be used for accessing a streaming server.

Messages

Menu	Description
Create message	Create and send text or multimedia messages.
My messages	Access messages that you have received, sent, or that have failed during sending.
Templates	Make and use templates of frequently used messages or passages.

Menu	Description
Delete all	Delete messages in each message folder all at once.
Settings	Set up various options for using the messaging services.
SOS messages	Specify options for sending and receiving an SOS message. You can send an SOS message by pressing [**+**/**-**] 4 times in Idle mode, with the phone closed.
Memory status	Check the amount of memory currently in use in each message folder.

My files

Menu	Description
Images, Videos, Music, Sounds, Other files	Access media files and other files stored in the phone's memory.
Memory card	Access the files stored on a memory card. This menu is only available when you insert a memory card into the phone.
Memory status	Check memory information for media items.

Camera

Use the camera embedded in your phone to take photos and record videos.

Settings

Menu	Description
Time and date	Change the time and date displayed on your phone.
Phone settings → Language	Select a language for the display text.
Phone settings → Greeting message	Enter the greeting that is displayed briefly when the phone is switched on.
Phone settings → Shortcuts	Use the Navigation keys as shortcuts to access specific menus directly from Idle mode.
Phone settings → Volume key	Set how the phone reacts if you press and hold [**+**/**-**] when a call comes in.
Phone settings → USB settings	Select a USB mode that will be used when you connect your phone to a PC via USB interface.
Phone settings → Extra settings	Change additional settings for using the phone.
Phone settings → Offline mode	Switch the phone to Offline mode, in which the phone functions requiring network connection are deactivated.
Display settings → Wallpaper	Set up the idle screen on the display.
Display settings → Main menu style	Select a display style for the main menu screen.

Menu	Description
Display settings → Skin	Select a skin color pattern for Menu mode.
Display settings → Brightness	Adjust the brightness of the display for varying lighting conditions.
Display settings → Dialling display	Customize the settings for the display while dialling.
Display settings → Show caller information	Set the phone to display missed call notifications with the most recently missed caller's information.
Sound settings → Incoming call	Change the sound settings for incoming calls.

Menu	Description
Sound settings → Keypad tone	Select the tone that the phone sounds when you press a key.
Sound settings → Message tone	Change the sound settings for incoming messages individually according to message type.
Sound settings → Power on/off	Select the melody that the phone sounds when it is switched on or off.
Sound settings → Silent mode	Set how the phone acts to alert you to a specific event while in Silent mode.
Sound settings → Extra tones	Customize additional tones for the phone.

Menu	Description
Light settings → Backlight time	Select the length of time the backlight or display stays on when the phone is not used.
Light settings → Keypad light	Set how the phone controls the use of the keypad light.
Network services → Call diverting	Set the phone to reroute incoming calls to a phone number that you specify.
Network services → Call barring	Set the phone to restrict calls.
Network services → Call waiting	Set the phone to inform you when someone is calling you while on another call.

Menu	Description
Network services → Network selection	Select the network to be used while roaming outside of your home area, or let the network be chosen automatically.
Network services → Caller ID	Set the phone to hide your phone number from the person you are calling.
Network services → Voice mail server	Store the number of the voicemail server and access your voicemails.
Network services → Closed user group	Set calls to be restricted to a selected user group.

Menu	Description
Bluetooth	Connect the phone wirelessly to other Bluetooth devices.
Security → PIN check	Activate your PIN to protect your SIM card against unauthorized use.
Security → Change PIN code	Change the PIN.
Security → Phone lock	Activate your phone password to protect your phone against unauthorized use.
Security → Change password	Change the phone password.

Menu	Description
Security → Privacy lock	Lock access to messages, files, or all menu functions on the phone, except for call functions.
Security → SIM lock	Set the phone to work only with the current SIM card by assigning a SIM lock password.
Security → Fixed dialling mode	Set the phone to restrict calls to a limited set of phone numbers, if supported by your SIM card.
Security → Change PIN2 code	Change your current PIN2, if supported by your SIM card.

Menu	Description
Security → Mobile tracker	Set the phone to send the preset tracking message to your family or friends when someone tries to use your phone with another SIM card.
Connection settings	Create and customize the profiles containing the settings for connecting your phone to the network.
Reset settings	Reset the phone's settings you have changed.

Health and safety information

Exposure to radio frequency (RF) signals

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on the safety standards that were developed by independent scientific organizations through periodic and through evaluation of scientific studies.

The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless phones employs a unit of measurement known as Specific Absorption Rate (SAR). The SAR limit set by the FCC is 1.6W/kg[1].

SAR tests are conducted using standard operating positions specified by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output of the phone. Before a new model phone is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model.

1. In the U.S. and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kg (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements.

While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID printed in the label on the phone.

For body operation

For body worn operation, this model phone has been tested and meets the FCC RF exposure guidelines when used with a Samsung-supplied or approved accessory designated for this product or when used with and accessory that contains no metal and that positions the handset a minimum from the body.

The minimum distance for this model phone is written in the FCC certification information from the body. None compliance with the above conditions may violate FCC RF exposure guidelines.

For more Information concerning exposure to radio frequency signals, see the following websites:

Federal Communications Commission (FCC)
http://www.fcc.gov

Cellular Telecommunications Industry Association (CTIA): http://www.ctia.org

U.S.Food and Drug Administration (FDA)
http://www.fda.gov/cdrh/consumer

World Health Organization (WHO)
http://www.who.int/peh-emf/en

Precautions when using batteries

- Never use any charger or battery that is damaged in any way.
- Use the battery only for its intended purpose.
- If you use the phone near the network's base station, it uses less power; talk and standby time are greatly affected by the signal strength on the cellular network and the parameters set by the network operator.
- Battery charging time depends on the remaining battery charge and the type of battery and charger used. The battery can be charged and discharged hundreds of times, but it will gradually wear out. When the operation time (talk time and standby time) is noticeably shorter than normal, it is time to buy a new battery.
- If left unused, a fully charged battery will discharge itself over time.
- Use only Samsung-approved batteries and recharge your battery only with Samsung-approved chargers. When a charger is not in use, disconnect it from the power source. Do not leave the battery connected to a charger for more than a week, since overcharging may shorten its life.
- Extreme temperatures will affect the charging capacity of your battery: it may require cooling or warming first.
- Do not leave the battery in hot or cold places, such as in a car in summer or winter conditions, as you will reduce the capacity and lifetime of the battery. Always try to keep the battery at room temperature.

A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Li-ion batteries are particularly affected by temperatures below 0° C (32° F).

- Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes a direct connection between the + and -. terminals of the battery (metal strips on the battery), for example when you carry a spare battery in a pocket or bag. Short-circuiting the terminals may damage the battery or the object causing the short-circuiting.
- Dispose of used batteries in accordance with local regulations. Always recycle. Do not dispose of batteries in a fire.

Road safety

Your wireless phone gives you the powerful ability to communicate by voice, almost anywhere, anytime. But an important responsibility accompanies the benefits of wireless phones, one that every user must uphold.

When driving a car, driving is your first responsibility. When using your wireless phone behind the wheel of a car, practice good common sense and remember the following tips.

1. Get to know your wireless phone and its features, such as speed dial and redial. If available, these features help you to place your call without taking your attention off the road.
2. When available, use a hands-free device. If possible, add an extra layer of convenience and safety to your wireless phone with one of the many hands-free accessories available today.
3. Position your wireless phone within easy reach. Be able to access your wireless phone without removing your eyes from the road. If you get an incoming call at an inconvenient time, let your voicemail answer it for you.
4. Let the person you are speaking with know you are driving; if necessary, suspend the call in heavy traffic or hazardous weather conditions. Rain, sleet, snow, ice and even heavy traffic can be hazardous.

5. Do not take notes or look up phone numbers while driving. Jotting down a To Do list or flipping through your phonebook takes your attention away from your primary responsibility, driving safely.
6. Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan calls when your car will be stationary. If you need to make a call while moving, dial only a few numbers, check the road and your mirrors, then continue.
7. Do not engage in stressful or emotional conversations that may be distracting. Make the people with whom you are talking aware that you are driving and suspend conversations that have the potential to divert your attention from the road.
8. Use your wireless phone to call for help. Dial the emergency number in the case of fire, traffic accident or medical emergencies. Remember, it is a free call on your wireless phone!
9. Use your wireless phone to help others in emergencies. If you see a car accident, crime in progress or other serious emergency where lives are in danger, call the emergency number, as you would want others to do for you.
10. Call roadside assistance or a special nonemergency wireless assistance number when necessary. If you see a broken-down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured, or a vehicle you know to be stolen, call roadside assistance or any other special nonemergency wireless number.

Operating environment

Remember to follow any special regulations in force in any area and always switch off your phone whenever it is forbidden to use it, or when it may cause interference or danger.

When connecting the phone or any accessory to another device, read its user's guide for detailed safety instructions. Do not connect incompatible products.

As with other mobile radio transmitting equipment, users are advised that for the satisfactory operation of the equipment and for the safety of personnel, it is recommended that the equipment should only be used in the normal operating position (held to your ear with the antenna pointing over your shoulder).

Electronic devices

Most modern electronic equipment is shielded from radio frequency (RF) signals. However, certain electronic equipment may not be shielded against the RF signals from your wireless phone. Consult the manufacturer to discuss alternatives.

Pacemakers

Pacemaker manufacturers recommend that a minimum distance of 15 cm (6 inches) be maintained between a wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research and recommendations of Wireless Technology Research.

Persons with pacemakers:

- Should always keep the phone more than 15 cm (6 inches) from their pacemaker when the phone is switched on
- Should not carry the phone in a breast pocket
- Should use the ear opposite the pacemaker to minimize potential interference

If you have any reason to suspect that interference is taking place, switch off your phone immediately.

Hearing aids

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may wish to consult your hearing aid manufacturer to discuss alternatives. Other Medical Devices If you use any other personal medical devices, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information. Switch off your phone in health care facilities when any regulations posted in these areas instruct you to do so.

Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Vehicles

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted facilities

Switch off your phone in any facility where posted notices require you to do so.

Potentially explosive environments

Switch off your phone when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Users are advised to switch off the phone while at a refueling point (service station).

Users are reminded of the need to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), areas where the air contains chemicals or particles, such as grain, dust or metal powders, and any other area where you would normally be advised to turn off your vehicle engine.

Emergency calls

This phone, like any wireless phone, operates using radio signals, wireless and landline networks, as well as user-programmed functions, which cannot guarantee connection in all conditions. Therefore, you should never rely solely on any wireless phone for essential communications (medical emergencies, for example).

Remember, to make or receive any calls the phone must be switched on and in a service area with adequate signal strength. Emergency calls may not be possible on all wireless phone networks or when certain network services and/or phone features are in use. Check with local service providers.

To make an emergency call:

1. If the phone is not on, switch it on.
2. Key in the emergency number for your present location (for example, 911 or any other official emergency number). Emergency numbers vary by location.
3. Press [ ].

If certain features are in use (call barring, for example), you may first need to deactivate those features before you can make an emergency call. Consult this document and your local cellular service provider.

When making an emergency call, remember to give all the necessary information as accurately as possible. Remember that your phone may be the only means of communication at the scene of an accident; do not end the call until given permission to do so.

FCC Notice and Cautions

FCC Notice

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The phone may cause TV or radio interference if used in close proximity to receiving equipment. The FCC can require you to stop using the phone if such interference cannot be eliminated.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58).

For a copy of this standard, contact the National Fire Protection Association, One Battery march Park, Quincy, MA 02269, Attn: Publication Sales Division.

Cautions

Changes or modifications made in the radio phone, not expressly approved by Samsung, will void the user's authority to operate the equipment.

Only use approved batteries, antennas and chargers. The use of any unauthorized accessories may be dangerous and void the phone warranty if said accessories cause damage or a defect to the phone.

Although your phone is quite sturdy, it is a complex piece of equipment and can be broken. Avoid dropping, hitting, bending or sitting on it.

Other important safety information

- Only qualified personnel should service the phone or install the phone in a vehicle. Faulty installation or service may be dangerous and may invalidate any warranty applicable to the device.

- Check regularly that all wireless phone equipment in your vehicle is mounted and operating properly.
- Do not store or carry flammable liquids, gases, or explosive materials in the same compartment as the phone, its parts, or accessories.
- For vehicles equipped with an air bag, remember that an air bag inflates with great force. Do not place objects, including both installed or portable wireless equipment in the area over the air bag or in the air bag deployment area. If wireless equipment is improperly installed and the air bag inflates, serious injury could result.
- Switch off your phone before boarding an aircraft. The use of wireless phones in aircraft may be dangerous to the operation of the aircraft, and is illegal.
- Failure to observe these instructions may lead to the suspension or denial of telephone services to the offender, or legal action, or both.

Care and maintenance

Your phone is a product of superior design and craftsmanship and should be treated with care. The suggestions below will help you fulfill any warranty obligations and allow you to enjoy this product for many years.

- Keep your phone and all its parts and accessories out of the reach of small children and pets. They may accidentally damage these things or choke on small parts.
- Keep the phone dry. Precipitation, humidity, and liquids contain minerals that will corrode electronic circuits.
- Do not use the phone with a wet hand. Doing so may cause an electric shock to you or damage to the phone.
- Do not use or store the phone in dusty, dirty areas, as its moving parts may be damaged.

- Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the phone in cold areas. When the phone warms up to its normal operating temperature, moisture can form inside the phone, which may damage the phone's electronic circuit boards.
- Do not drop, knock, or shake the phone. Rough handling can break internal circuit boards.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone. Wipe it with a soft cloth slightly dampened in a mild soap-and-water solution.
- Do not paint the phone. Paint can clog the device's moving parts and prevent proper operation.
- Do not put the phone in or on heating devices, such as a microwave oven, a stove, or a radiator. The phone may explode when overheated.
- When the phone or battery gets wet, the label indicating water damage inside the phone changes color. In this case, phone repairs are no longer guaranteed by the manufacturer's warranty, even if the warranty for your phone has not expired.
- If your phone has a flash or light, do not use it too close to the eyes of people or animals. This may cause damage to their eyes.
- Use only the supplied or an approved replacement antenna. Unauthorized antennas or modified accessories may damage the phone and violate regulations governing radio devices.
- If the phone, battery, charger, or any accessory is not working properly, take it to your nearest qualified service facility. The personnel there will assist you, and if necessary, arrange for service.

Acknowledging special precautions and the FCC and Industry Canada Notice

Cautions

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance information

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Information to user

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Appendix A: CERTIFICATION INFORMATION (SAR)

THIS MODEL PHONE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on safety standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate (SAR). The SAR limit set by the FCC is 1.6 W/kg.

SAR Tests are conducted using standard operating positions accepted by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

Before a new model phone is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government adopted requirement for safe exposure. The tests are performed in positions and locations(e.g., at the ear and worn on the body) as required by the FCC for each model.

The highest reported SAR values are:

- GSM850 Head: x.xx W/kg, Body-worn: x.xx W/kg,
- GSM1900 Head: x.xx W/kg, Body-worn: x.xx W/kg

Body-worn operations are restricted to Samsung supplied, approved or none Samsung designated accessories that have no metal and must provide at least 1.5 cm separation between the device, including its antenna whether extended or retracted, and the user's body.

None compliance to the above restrictions may violate FCC RF exposure guidelines.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines.

SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID A3LSGHX836.

Appendix B: Guide to safe and responsible wireless phone use

Cellular Telecommunications & Internet Association

"Safety is the most important call you will ever make."

A guide to safe and responsible wireless phone use

TENS OF MILLIONS OF PEOPLE IN THE U.S. TODAY TAKE ADVANTAGE OF THE UNIQUE COMBINATION OF CONVENIENCE, SAFETY AND VALUE DELIVERED BY THE WIRELESS TELEPHONE. QUITE SIMPLY, THE WIRELESS PHONE GIVES PEOPLE THE POWERFUL ABILITY TO COMMUNICATE BY VOICE-ALMOST ANYWHERE, ANYTIME-WITH THE BOSS, WITH A CLIENT, WITH THE KIDS, WITH EMERGENCY PERSONNEL OR EVEN WITH THE POLICE. EACH YEAR, AMERICANS MAKE BILLIONS OF CALLS FROM THEIR WIRELESS PHONES, AND THE NUMBERS ARE RAPIDLY GROWING.

But an important responsibility accompanies those benefits, one that every wireless phone user must uphold. When driving a car, driving is your first responsibility. A wireless phone can be an invaluable tool, but good judgment must be exercised at all times while driving a motor vehicle whether on the phone or not.

The basic lessons are ones we all learned as teenagers. Driving requires alertness, caution and courtesy. It requires a heavy dose of basic common sense-keep your head up, keep your eyes on the road, check your mirrors frequently and watch out for other drivers. It requires obeying all traffic signs and signals and staying within the speed limit. It means using seat belts and requiring other passengers to do the same.

But with wireless phone use, driving safely means a little more. This brochure is a call to wireless phone users everywhere to make safety their first priority when behind the wheel of a car. Wireless telecommunications is keeping us in touch, simplifying our lives, protecting us in emergencies and providing opportunities to help others in need. When it comes to the use of wireless phones, safety is your most important call.

Wireless phone "safety tips"

Below are safety tips to follow while driving and using a wireless phone which should be easy to remember:

1. Get to know your wireless phone and its features such as speed dial and redial. Carefully read your instruction manual and learn to take advantage of valuable features most phones offer, including automatic redial and memory. Also, work to memorize the phone keypad so you can use the speed dial function without taking your attention off the road.
2. When available, use a hands free device. A number of hands free wireless phone accessories are readily available today. Whether you choose an installed mounted device for your wireless phone or a speaker phone accessory, take advantage of these devices if available to you.
3. Position your wireless phone within easy reach. Make sure you place your wireless phone within easy reach and where you can grab it without removing your eyes from the road. If you get an incoming call at an inconvenient time, if possible, let your voicemail answer it for you.

4. Suspend conversations during hazardous driving conditions or situations. Let the person you are speaking with know you are driving; if necessary, suspend the call in heavy traffic or hazardous weather conditions. Rain, sleet, snow and ice can be hazardous, but so is heavy traffic. As a driver, your first responsibility is to pay attention to the road.
5. Do not take notes or look up phone numbers while driving. If you are reading an address book or business card, or writing a "to do" list while driving a car, you are not watching where you are going. It's common sense. Don't get caught in a dangerous situation because you are reading or writing and not paying attention to the road or nearby vehicles.
6. Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan your calls before you begin your trip or attempt to coincide your calls with times you may be stopped at a stop sign, red light or otherwise stationary. But if you need to dial while driving, follow this simple tip-dial only a few numbers, check the road and your mirrors, then continue.
7. Do not engage in stressful or emotional conversations that may be distracting. Stressful or emotional conversations and driving do not mix-they are distracting and even dangerous when you are behind the wheel of a car. Make people you are talking with aware you are driving and if necessary, suspend conversations which have the potential to divert your attention from the road.
8. Use your wireless phone to call for help. Your wireless phone is one of the greatest tools you can own to protect yourself and your family in dangerous situations-with your phone at your side, help is only three numbers away. Dial 9-1-1 or other local emergency number in the case of fire, traffic accident, road hazard or medical emergency. Remember, it is a free call on your wireless phone!
9. Use your wireless phone to help others in emergencies. Your wireless phone provides you a perfect opportunity to be a "Good Samaritan" in your community. If you see an auto accident, crime in progress or other serious emergency where lives are in danger, call 9-1-1 or other local emergency number, as you would want others to do for you.

10. Call roadside assistance or a special wireless non emergency assistance number when necessary. Certain situations you encounter while driving may require attention, but are not urgent enough to merit a call for emergency services. But you still can use your wireless phone to lend a hand. If you see a broken-down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured or a vehicle you know to be stolen, call roadside assistance or other special non-emergency wireless number.

Careless, distracted individuals and people driving irresponsibly represent a hazard to everyone on the road. Since 1984, the Cellular Telecommunications Industry Association and the wireless industry have conducted educational outreach to inform wireless phone users of their responsibilities as safe drivers and good citizens.

As we approach a new century, more and more of us will take advantage of the benefits of wireless telephones. And, as we take to the roads, we all have a responsibility to drive safely.

"The wireless industry reminds you to use your phone safely when driving."

Cellular Telecommunications & Internet Association For more information, please call 1-888-901-SAFE.
For updates: http://www.ctia.org

Appendix C: Consumer update on wireless phones

U.S. Food and Drug Administration

1. What kinds of phones are the subject of this update?

The term wireless phone refers here to hand-held wireless phones with built-in antennas, often called cell, mobile, or PCS phones. These types of wireless phones can expose the user to measurable radio frequency energy (RF) because of the short distance between the phone and the user s head. These RF exposures are limited by Federal Communications Commission safety guidelines that were developed with the advice of FDA and other federal health and safety agencies.

When the phone is located at greater distances from the user, the exposure to RF is drastically lower because a person's RF exposure decreases rapidly with increasing distance from the source. The so-called "cordless phones," which have a base unit connected to the telephone wiring in a house, typically operate at far lower power levels, and thus produce RF exposures well within the FCC's compliance limits.

2. Do wireless phones pose a health hazard?

The available scientific evidence does not show that any health problems are associated with using wireless phones. There is no proof, however, that wireless phones are absolutely safe. Wireless phones emit low levels of radio frequency energy (RF) in the microwave range while being used. They also emit very low levels of RF when in the stand-by mode. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low level RF that does not produce heating effects causes no known adverse health effects. Many studies of low level RF exposures have not found any biological effects. Some studies have suggested that some biological effects may occur, but such findings have not been confirmed by additional research. In some cases, other researchers have had difficulty in reproducing those studies, or in determining the reasons for inconsistent results.

3. What is FDA's role concerning the safety of wireless phones?

Under the law, FDA does not review the safety of radiation emitting consumer products such as wireless phones before they can be sold, as it does with new drugs or medical devices. However, the agency has authority to take action if wireless phones are shown to emit radio frequency energy (RF) at a level that is hazardous to the user.
In such a case, FDA could require the manufacturers of wireless phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists.

Although the existing scientific data do not justify FDA regulatory actions, FDA has urged the wireless phone industry to take a number of steps, including the following:

- Support needed research into possible biological effects of RF of the type emitted by wireless phones;

- Design wireless phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and
- Cooperate in providing users of wireless phones with the best possible information on possible effects of wireless phone use on human health

FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of RF safety to ensure coordinated efforts at the federal level. The following agencies belong to this working group:

- National Institute for Occupational Safety and Health
- Environmental Protection Agency Federal Communications Commission
- Occupational Safety and Health Administration
- National Telecommunications and Information Administration
- The National Institutes of Health participates in some interagency working group activities, as well.

FDA shares regulatory responsibilities for wireless phones with the Federal Communications Commission (FCC). All phones that are sold in the United States must comply with FCC safety guidelines that limit RF exposure.

FCC relies on FDA and other health agencies for safety questions about wireless phones.

FCC also regulates the base stations that the wireless phone networks rely upon. While these base stations operate at higher power than do the wireless phones themselves, the RF exposures that people get from these base stations are typically thousands of times lower than those they can get from wireless phones. Base stations are thus not the primary subject of the safety questions discussed in this document.

4. What is FDA doing to find out more about the possible health effects of wireless phone RF?

FDA is working with the U.S. National Toxicology Program and with groups of investigators around the world to ensure that high priority animal studies are conducted to address important questions about the effects of exposure to radio frequency energy (RF).

FDA has been a leading participant in the World Health Organization International Electromagnetic Fields (EMF) Project since its inception in 1996. An influential result of this work has been the development of a detailed agenda of research needs that has driven the establishment of new research programs around the world. The Project has also helped develop a series of public information documents on EMF issues.

FDA and the Cellular Telecommunications & Internet Association (CTIA) have a formal Cooperative Research and Development Agreement (CRADA) to do research on wireless phone safety. FDA provides the scientific oversight, obtaining input from experts in government, industry, and academic organizations. CTIA-funded research is conducted through contracts to independent investigators. The initial research will include both laboratory studies and studies of wireless phone users. The CRADA will also include a broad assessment of additional research needs in the context of the latest research developments around the world.

5. What steps can I take to reduce my exposure to radio frequency energy from my wireless phone?

If there is a risk from these products—and at this point we do not know that there is—it is probably very small. But if you are concerned about avoiding even potential risks, you can take a few simple steps to minimize your exposure to radio frequency energy (RF). Since time is a key factor in how much exposure a person receives, reducing the amount of time spent using a wireless phone will reduce RF exposure.

If you must conduct extended conversations by wireless phone every day, you could place more distance between your body and the source of the RF, since the exposure level drops off dramatically with distance. For example, you could use a headset and carry the wireless phone away from your body or use a wireless phone connected to a remote antenna.

Again, the scientific data do not demonstrate that wireless phones are harmful. But if you are concerned about the RF exposure from these products, you can use measures like those described above to reduce your RF exposure from wireless phone use.

6. What about children using wireless phones?

The scientific evidence does not show a danger to users of wireless phones, including children and teenagers. If you want to take steps to lower exposure to radio frequency energy (RF), the measures described above would apply to children and teenagers using wireless phones. Reducing the time of wireless phone use and increasing the distance between the user and the RF source will reduce RF exposure.

Some groups sponsored by other national governments have advised that children be discouraged from using wireless phones at all. For example, the government in the United Kingdom distributed leaflets containing such a recommendation in December 2000. They noted that no evidence exists that using a wireless phone causes brain tumors or other ill effects. Their recommendation to limit wireless phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists.

7. Do hands-free kits for wireless phones reduce risks from exposure to RF emissions?

Since there are no known risks from exposure to RF emissions from wireless phones, there is no reason to believe that hands-free kits reduce risks. Hands-free kits can be used with wireless phones for convenience and comfort. These systems reduce the absorption of RF energy in the head because the phone, which is the source of the RF emissions, will not be placed against the head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb more RF energy. Wireless phones marketed in the U.S. are required to meet safety requirements regardless of whether they are used against the head or against the body. Either configuration should result in compliance with the safety limit.

8. Do wireless phone accessories that claim to shield the head from RF radiation work?

Since there are no known risks from exposure to RF emissions from wireless phones, there is no reason to believe that accessories that claim to shield the head from those emissions reduce risks.

Some products that claim to shield the user from RF absorption use special phone cases, while others involve nothing more than a metallic accessory attached to the phone. Studies have shown that these products generally do not work as advertised. Unlike "hand-free" kits, these so-called "shields" may interfere with proper operation of the phone. The phone may be forced to boost its power to compensate, leading to an increase in RF absorption. In February 2002, the Federal trade Commission (FTC) charged two companies that sold devices that claimed to protect wireless phone users from radiation with making false and unsubstantiated claims. According to FTC, these defendants lacked a reasonable basis to substantiate their claim.

9. What about wireless phone interference with medical equipment?

Radio frequency energy (RF) from wireless phones can interact with some electronic devices. For this reason, FDA helped develop a detailed test method to measure electromagnetic interference (EMI) of implanted cardiac pacemakers and defibrillators from wireless telephones. This test method is now part of a standard sponsored by the Association for the Advancement of Medical instrumentation (AAMI). The final draft, a joint effort by FDA, medical device manufacturers, and many other groups, was completed in late 2000. This standard will allow manufacturers to ensure that cardiac pacemakers and defibrillators are safe from wireless phone EMI.

FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that no interference occurs when a person uses a compatible phone and a compatible hearing aid at the same time. This standard was approved by the IEEE in 2000.

FDA continues to monitor the use of wireless phones for possible interactions with other medical devices. Should harmful interference be found to occur, FDA will conduct testing to assess the interference and work to resolve the problem.

10. What are the results of the research done already?

The research done thus far has produced conflicting results, and many studies have suffered from flaws in their research methods. Animal experiments investigating the effects of radio frequency energy (RF) exposures characteristic of wireless phones have yielded conflicting results that often cannot be repeated in other laboratories. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. However, many of the studies that showed increased tumor development used animals that had been genetically engineered or treated with cancer causing chemicals so as to be pre-disposed to develop cancer in the absence of RF exposure. Other studies exposed the animals to RF for up to 22 hours per day. These conditions are not similar to the conditions under which people use wireless phones, so we don t know with certainty what the results of such studies mean for human health.

Three large epidemiology studies have been published since December 2000. Between them, the studies investigated any possible association between the use of wireless phones and primary brain cancer, gioma, meningioma, or acoustic neuroma, tumors of the brain or salivary gland, leukemia, or other cancers. None of the studies demonstrated the existence of any harmful health effects from wireless phone RF exposures. However, none of the studies can answer questions about long-term exposures, since the average period of phone use in these studies was around three years.

11. What research is needed to decide whether RF exposure from wireless phones poses a health risk?

A combination of laboratory studies and epidemiological studies of people actually using wireless phones would provide some of the data that are needed. Lifetime animal exposure studies could be completed in a few years. However, very large numbers of animals would be needed to provide reliable proof of a cancer promoting effect if one exists.

Epidemiological studies can provide data that is directly applicable to human populations, but 10 or more years follow-up may be needed to provide answers about some health effects, such as cancer. This is because the interval between the time of exposure to a cancer-causing agent and the time tumors develop - if they do - may be many, many years. The interpretation of epidemiological studies is hampered by difficulties in measuring actual RF exposure during day-to-day use of wireless phones. Many factors affect this measurement, such as the angle at which the phone is held, or which model of phone is used.

12. Which other federal agencies have responsibilities related to potential RF health effects?

Additional information on the safety of RF exposures from various sources can be obtained from the following organizations.

FCC RF Safety Program:
http://www.fcc.gov/oet/rfsafety/

Environmental Protection Agency (EPA):
http://www.epa.gov/radiation/

Occupational Safety and Health Administration's (OSHA): http://www.osha-slc.gov/SLTC/radiofrequencyradiation/index.html

National Institute for Occupational Safety and Health (NIOSH): http://www.cdc.gov/niosh/homepage.html

World health Organization (WHO):
http://www.who.int/peh-emf/

International Commission on Non-Ionizing Radiation Protection: http://www.icnirp.de

Health Protection Agency (UK)
http://www.hpa.org.uk/radiation/[1]

1. US Food and Drug Administration http://www.fda.gov/cellphones